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# UNCTAD'S CONTRIBUTION TO THE IMPLEMENTATION OF THE UNITED NATIONS NEW AGENDA FOR THE DEVELOPMENT OF AFRICA IN THE 1990s: AFRICAN TRANSPORT INFRASTRUCTURE, TRADE AND COMPETITIVENESS

**Report by the UNCTAD secretariat**

**Executive summary**

The transport sector is a key sector in creating a dynamic investment-export nexus in Africa, but transport systems in sub-Saharan Africa are being weakened by a lack of investment, and the poor performance of the transport sector is adversely affecting export performance and market development. Private finance in transport infrastructure projects offers a new source of investment funds and can make a useful contribution in public-private partnerships where the profit motive is reconciled with the public interest. However, the small scale of private flows in relation to requirements, and limits on the types of assets and countries to which it is attracted, mean that private finance cannot in itself fill the financing gap. It is still critical to mobilize sufficient public finance to meet transport infrastructure requirements using cost recovery principles. Moreover, an increased level of official development assistance, and less tied aid, is also required. Finally, there is as strong a case for a regional approach to transport infrastructure financing as there is for a regional approach to transit traffic facilitation. Such an approach can reduce financing requirements and also help to mobilize resources from donors and private sources.

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## Introduction

1. In its consideration of the item on UNCTAD's contribution to the implementation of the United Nations New Agenda for the Development of Africa in the 1990s (UN-NADAF), the Trade and Development Board, at its forty-fifth session, assessed prospects for agriculture, trade and industrialization and concluded that reforms had failed adequately to address structural constraints, including weaknesses in physical infrastructure. It noted the negative effects of infrastructural weaknesses on trade and development, particularly in the agricultural sector, and called on the secretariat to carry out further work on the links between trade, transport and African economic growth, and their policy implications.

2. In the light of the above, the aim of the present report is to assess the extent to which transport problems have adverse effects on African trade and balance of payments, to analyse the underlying factors which account for key problems, and to explore specific policy issues which have to be addressed in order to resolve these problems. Particular emphasis will be given to policy options for financing transport infrastructure, and the need for, and priorities in, regional and subregional cooperation.

3. The report builds on earlier analyses of African economic performance undertaken by the UNCTAD secretariat and discussed by the Trade and Development Board, notably "African economic performance, prospects and policy issues" (TD/B/44/12) and Part Two of the *Trade and Development Report, 1998*. These have stressed that increased investment is a prerequisite for achieving and sustaining the 6 per cent growth target set by UN-NADAF and that success in raising investment in turn depends on increased export revenues to finance imports of capital goods and thus enable the use of more productive technologies. Increased investment in transport infrastructure facilities, equipment and services is central to the creation of a dynamic investment-export nexus in Africa since transport is an important determinant of competitiveness.

## Chapter I

## TRANSPORT COSTS, COMPETITIVENESS AND EXPORT PERFORMANCE

### A. The direct effects of transport costs

4. Trade performance and competitiveness are affected by both international transport costs (which are narrowly understood here as the costs of moving goods between countries) and internal transport costs (understood here as the costs of moving goods within a country), and by the way in which these costs affect imports as well as exports. High transport costs for moving goods from points of production to final destinations can price a country out of export markets. This is particularly so in natural-resource-based activities and labour-intensive industries, where transport costs represent a large component of the final cost of the product. High transport costs on imports inflate the prices of imported goods, including food, capital goods, intermediate inputs and fuel, increasing the cost of domestic production. It has particularly negative consequences for the competitiveness of manufactured exports with a large import content.

5. The competitive advantage of most African economies is in natural-resource-based activities and labour-intensive industries. Moreover, the available evidence suggests that producers in sub-Saharan Africa often face a transport disadvantage vis-à-vis their competitors.

6. The precise magnitude and nature of this disadvantage varies between countries, but in general, two patterns seem to prevail. Firstly, for international transport costs, the margin seems to be higher for imports than for exports. Secondly, internal transport costs incurred in getting exports from production areas through ports and out of the country, and imports from their point of entry into the country to producers and consumers, are in most cases a more serious source of competitive disadvantage than inter-country transport costs. Notable exceptions to this generalization are the international air transport links of Africa, which are particularly weak, and the case of landlocked countries, whose overseas international freight traffic faces particular problems.

7. International Monetary Fund (IMF) statistics indicate that, freight costs as a percentage of cost, insurance and freight (c.i.f.) import values, are five percentage points higher in sub-Saharan Africa (excluding South Africa), than the average for all developing countries, and more than 10 percentage points higher in landlocked African countries (table 1). Only four countries in Africa had freight costs which were lower than the developing country average. In 31 out of 43 countries in sub-Saharan Africa, freight costs on imports were 50 per cent higher than the average for developing countries, and for 14 of those countries they were more than double.[1]

**Table 1**
Estimates of total freight costs on imports
*(as % of import value)*

| | |
|---|---|
| Developed market-economy countries, total | 4.19 |
| Developing countries, total | 8.06 |
| *of which:* | |
| America | 7.08 |
| Asia | 7.97 |
| Africa | 11.41 |
| Landlocked Africa | 18.79 |
| Northern Africa | 9.01 |
| Eastern Africa | 13.70 |
| Western Africa | 13.60 |

*Source:* UNCTAD, *Review of Maritime Transport 1998* and, for landlocked Africa, UNCTAD secretariat estimates (weighted averages).

8. For exports, the best general estimates available are for freight margins on shipments from countries in sub-Saharan Africa and their competitors to the United States, whose customs authority collects data on both the export value (freight alongside ship, f.a.s.) and import value (c.i.f.) of all imports. These show that for the top 15 export products from African countries to the United States, the *ad valorem* transport costs[2] are higher than for their competitors in all except three products (table 2). For most of these products, the costs are only 1-2 percentage points higher, but the transport disadvantage is more severe for manufactured tobacco, wood and wood articles, and cotton fabric and textile products shipped by air. In half of the products exported by sea and in four-fifths of the products exported by air, transport costs are higher by over 30 per cent than those of their competitors, though this may be partly due to the fact that Africa exports lower-value products.

[1] It should be noted that the IMF figures are imperfect estimates, and part of the relatively high international transport costs of sub-Saharan African imports is due to their composition, in particular the importance of a few bulky, low-value commodities, particularly petroleum products, cereals and fertilizer.

[2] That is, the difference between the c.i.f. and f.a.s. value of the product expressed as a percentage of the f.a.s. value.

**Table 2**

African transport costs for the 15 major exports to the United States compared with competing countries

| Product | Exports (in thousands of dollars) | International transport costs[a] (as % of export value) | | | | Competitive disadvantage (percentage points)[c] | |
|---|---|---|---|---|---|---|---|
| | | African exporters | | Other exporters[b] | | | |
| | | Sea | Air | Sea | Air | Sea | Air |
| Fresh or dried nuts and fruits | 11 364 | 5.1 | - | 3.9 | - | 1.2 | - |
| Coffee, tea and spices | 101 716 | 7.9 | - | 6.2 | - | 1.7 | - |
| Raw vegetables suited for dyeing | 27 578 | 5.6 | 2.5 | 5.3 | 4.4 | 0.3 | -1.9 |
| Sugars and sugar confectionary | 27 011 | 12.4 | - | 12.4 | - | 0.0 | - |
| Cocoa beans and chocolate | 165 099 | 11.7 | - | 12.5 | - | -0.8 | - |
| Manufactured tobacco | 88 013 | 14.5 | - | 6.0 | - | 8.5 | - |
| Ores and concentrates | 135 128 | 24.9 | - | 21.9 | - | 3.0 | - |
| Mineral fuels and oils | 293 483 | 9.5 | - | 8.2 | - | 1.3 | - |
| Wood and wood articles | 11 125 | 19.1 | - | 14.5 | - | 4.6 | - |
| Fabrics of cotton | 13 283 | 7.5 | 25.3 | 5.4 | 10.1 | 2.1 | 15.2 |
| Articles of apparel and clothing | 82 688 | 5.7 | 16.3 | 3.6 | 11.1 | 2.1 | 5.2 |
| Other textile articles | 187 100 | 5.0 | 19.8 | 3.7 | 15.1 | 1.3 | 4.7 |
| Pearls and precious stones | 219 800 | - | 0.5 | - | 0.2 | - | 0.3 |
| Copper and articles | 30 130 | 3.9 | - | 2.6 | - | 1.3 | - |
| Other base metal products | 45 936 | 0.8 | - | 0.7 | - | 0.1 | - |

*Source:* Based on United States National Customs Statistics for 1993, and calculated from A. Amjadi, U. Reinke and A. Yeats, "Did external barriers cause the marginalization of sub-Saharan Africa in world trade", World Bank Policy Research Working Paper No. 1586 (Washington, DC, 1996), table 14.

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[a]Export value is measured as freight alongside ship (f.a.s.) rather than freight on board (f.o.b.)

[b]Excludes Mexico and Canada.

[c]Positive values indicate that *ad valorem* transport costs for African exporters are higher than their competitors; negative values indicate that they are lower.

9. Case studies undertaken to examine the supply chains for specific commodities on specific routes indicate that internal transport costs are particularly high.[3] Factors which inflate costs include the distance of production areas from the coast, relatively high port charges and high road transport costs. It was estimated in the mid-1990s, for example, that road transport costs in Côte d'Ivoire were two to three times more expensive than in south-east Asia, while studies in the late 1980s demonstrated that long-distance trucking costs in sub-Saharan Africa were four and a half times higher than in Pakistan.[4]

10. High inland transport costs are a particular problem for landlocked countries. There are 15 such countries in sub-Saharan Africa, accounting for 28 per cent of the total population. Most are more than 1,000 km from seaports. Their transport costs are also inflated and service quality reduced because of bureaucratic procedures involving documentation, customs and administrative costs, which cause unnecessary delays in the movement of goods.[5]

11. Except in a few cases (such as dark-fired tobacco) where African producers can influence world prices, high international and internal transport costs reduce returns to producers in Africa since they have to sell at world prices set beyond their control. This reduces the surplus available for investment.

12. For manufactured exports, the scope for squeezing wages or profits to offset high transport costs is highly limited. It is almost impossible to shift the burden of high transport costs onto wages since the latter are close to subsistence level. One pioneering empirical study has described the effect on wages of the reductions necessary to establish competitiveness for manufactured exports from African landlocked countries as "catastrophic". This conclusion is confirmed by a recent analysis which estimates that an increase in shipping costs of 6 percentage points on both exports and imports would wipe out one-third of domestic value-added for typical manufactured exports with high import content.[6]

13. The processing of natural resources before exporting is also constrained by the tendency for *ad valorem* transport rates to increase with additional fabrication. This arises because shipping tariffs are generally set according to the principle of "what the traffic can bear", i.e. according to the strength and weakness of demand rather than costs of carriage per se. Estimates regarding African exports to

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[3] E. Governal, M. Guilbault and C. Rizet, "Etude de la compétitivité des chaînes de transport africaines à partir des filières café et cacao", paper presented at the round table of the Ministerial Conference of Western and Central Africa States (CMEAOC) and the World Bank, Cotonou, June 1997.

[4] C. Rizet and J.L. Hine, "A comparison of costs and productivity of road freight transport in Africa and Pakistan", *Transport Review*, vol.13, no. 2, 1993, and D. Bouf and C. Rizet, "Prix et coûts du camionnage: une comparaison Afrique, Asie du Sud-Est", International Solidarity in Transport and Research in Sub-Saharan Africa (SITRASS) *Efficacité, concurrence, compétitivité: La Chaîne de transport en Afrique sub-saharienne*, Proceedings of the SITRASS 4 seminar, Brazzaville, 28-30 October 1996, pp. 295-309.

[5] For high-value export commodities, such as cotton and coffee, getting goods from warehouses in landlocked countries into ports and onto ships can constitute 8-14 per cent of their f.o.b. value, whilst for low-value products such as sugar it can constitute as much as 30 per cent. Similarly, it has been estimated that transit costs incurred between seaports and inland destinations constitute at least 40 per cent of the total freight costs of imports to landlocked countries, and are normally 50-60 per cent of such costs. See UNCTAD, "International transport costs facing land-locked developing countries" (UNCTAD/LDC/Misc.10, 1993).

[6] I. Livingstone, "International transport costs and industrial development in least developed countries", *Industry and Development*, vol. 19, 1987, and S. Radelet and J. Sachs, "Shipping costs, manufactured exports and economic growth", 1998, mimeo.

the United States suggest that "international freight costs generally are structured in a way which works against the local processing of domestically produced commodities".[7]

14. Finally, for both primary commodities and manufactured goods, the quality of domestic and international transport services has critical effects on competitiveness. Uncertainties in delivery times result in a discount on the market price for exports. They also disable just-in-time deliveries which are so important for international subcontracting. Uncertainties in import delivery mean that firms dependent on imported goods have to maintain large stocks, thereby tying up working capital. Poor communications as well as slow delivery increase transaction costs by raising the financial costs as well as the exchange rate risks.

## B. The indirect effects of transport costs

15. There are also a number of important indirect channels through which high transport costs affect export performance and competitiveness. Two significant effects are: firstly, the influence of poor local-level rural transport systems on specialization and market development; and, secondly, the effect of poor national transport systems on the international tradability of basic food staples and their cost.

16. In the predominantly agricultural economies of sub-Saharan Africa where production is dominated by smallholders, the degree of market development depends critically on the extent to which farm households are integrated into the wider market economy. Many observers have noted that households cling to some degree of subsistence production even when they could expect higher returns through specialization in high-value export or food crops. In the past this was attributed to an economically "perverse" supply response of African peasants. However, increasing evidence now shows that this is a rational response to high transaction costs in getting produce from farms to markets, as well as to the costs and risks of purchasing foodstuffs.[8]

17. The costs are related mainly to poor local-level transport systems in rural areas. Rural road densities are very low, particularly in comparison with Asia, even when adjusted for population density.[9] Moreover much of the rural road network is of low quality. Some rural roads become temporarily inaccessible during the rainy season, and even in the dry season driving is difficult because of many potholes. In the early 1990s it was estimated that half of the rural road network of sub-Saharan Africa needed "substantial rehabilitation".[10] The availability of transport capacity is also a problem in rural areas, particularly in harvest season, and there is a notable underdevelopment of those

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[7] A. Amadji and A.J. Yeats, "Have transport costs contributed to the relative decline of sub-Saharan African exports?", World Bank Policy Research Paper no. 1559 (Washington, DC, 1995), pp. 22-23.

[8] See S. W. Omamo, "Farm-to market transaction costs and specialization in small-scale agriculture: explorations with a non-separable household model", *Journal of Development Studies*, vol. 35, no. 2, 1998, pp. 152-163; S.W. Omamo, "Transport costs and smallholder cropping choices: an application to Siaya District, Kenya", *American Journal of Economics*, vol. 80, no. 2, 1998.

[9] In the early 1990s, for example, a group of 18 countries in humid and sub-humid tropical Africa had only 63 km of rural roads per 100 square km. Taking account of population density differences, this was less than one-sixth of the level in India in 1950; see D.S.C. Spencer, "Infrastructure and technology constraints to agricultural development in the humid and subhumid tropics of Africa", Environment and Production Technology Division Discussion Paper no. 3 (Washington, DC: International Food Policy Research Institute, 1994).

[10] See J.D.N. Riverson et al., "Rural roads in sub-Saharan Africa: lessons from World Bank experience", World Bank Technical Paper no.141, Africa Technical Department Series (Washington, DC, 1991).

intermediate forms of transport such as carts, donkeys and bicycles, which can considerably relax local rural transport constraints.

18. One effect of the weakness of local rural transport systems is to reduce agricultural production for export, but it also contributes to higher food costs, as the degree to which farmers can specialize and take advantage of local resource advantages is reduced. Rural credit markets are also underdeveloped as long distances are associated with high surveillance costs to lenders. Finally, and most significantly in the current policy environment, the efficacy of the price signals is reduced.

19. Another problem also related to the underdevelopment of internal transport systems is the tendency for many basic staple foodstuffs in sub-Saharan Africa to be internationally non-tradable outside the continent. In some cases, this reflects product characteristics such as perishability. However, it is also due to the high transport costs for these bulky and low-value goods. This undermines export performance by raising prices of food and hence labour costs, particularly where such staples predominate in national diets.[11]

20. The full integration of local farm-households into the national economy has not been possible because of the underdevelopment of the domestic network of marketing, transport and communications. Despite that, attempts have been made to open the domestic markets and integrate them into the world economy. As a result, large regions of the domestic economy have remained insulated from international trade. Unless the internal transport constraints are addressed, adjustment programmes cannot meet expectations and will inevitably have unintended consequences, including the reinforcement of dualism and pressures for policy reversal.

### C. Imports of transport services and the balance-of-payments constraint

21. The direct and indirect effects of high transport costs reduce the volume and worsen the terms of trade. The balance-of-payments constraint is also aggravated by the need to import transport services. The level of foreign exchange payments for transport services is very high for many sub-Saharan countries. For 20 out of a sample of 43 countries, such payments absorb over 20 per cent of total foreign exchange earnings from exports, and for 3 they absorb over 50 per cent. Landlocked countries are in a particularly difficult situation in this regard, and in 10 out of a sample of 14 such countries, transport payments absorb over a quarter of total foreign exchange earnings (chart 1).

## Chapter II

## CAUSES OF HIGH TRANSPORT COSTS

22. Transport costs depend on physical distances and the capacity and efficiency of transport systems. The latter include fixed physical facilities, mobile transport equipment (such as trucks and wagons), human resources and institutions which supply and operate transport services. It is possible to "unbundle" agents' responsibility for these elements to improve capacity and efficiency, for example by encouraging private sector participation in certain activities, and public provision in others. However, improvements with regard to one aspect, for example the management of transport operations, can be undermined if other elements, such as the condition of roads, are inadequate. Any transport system is as weak as its weakest link.

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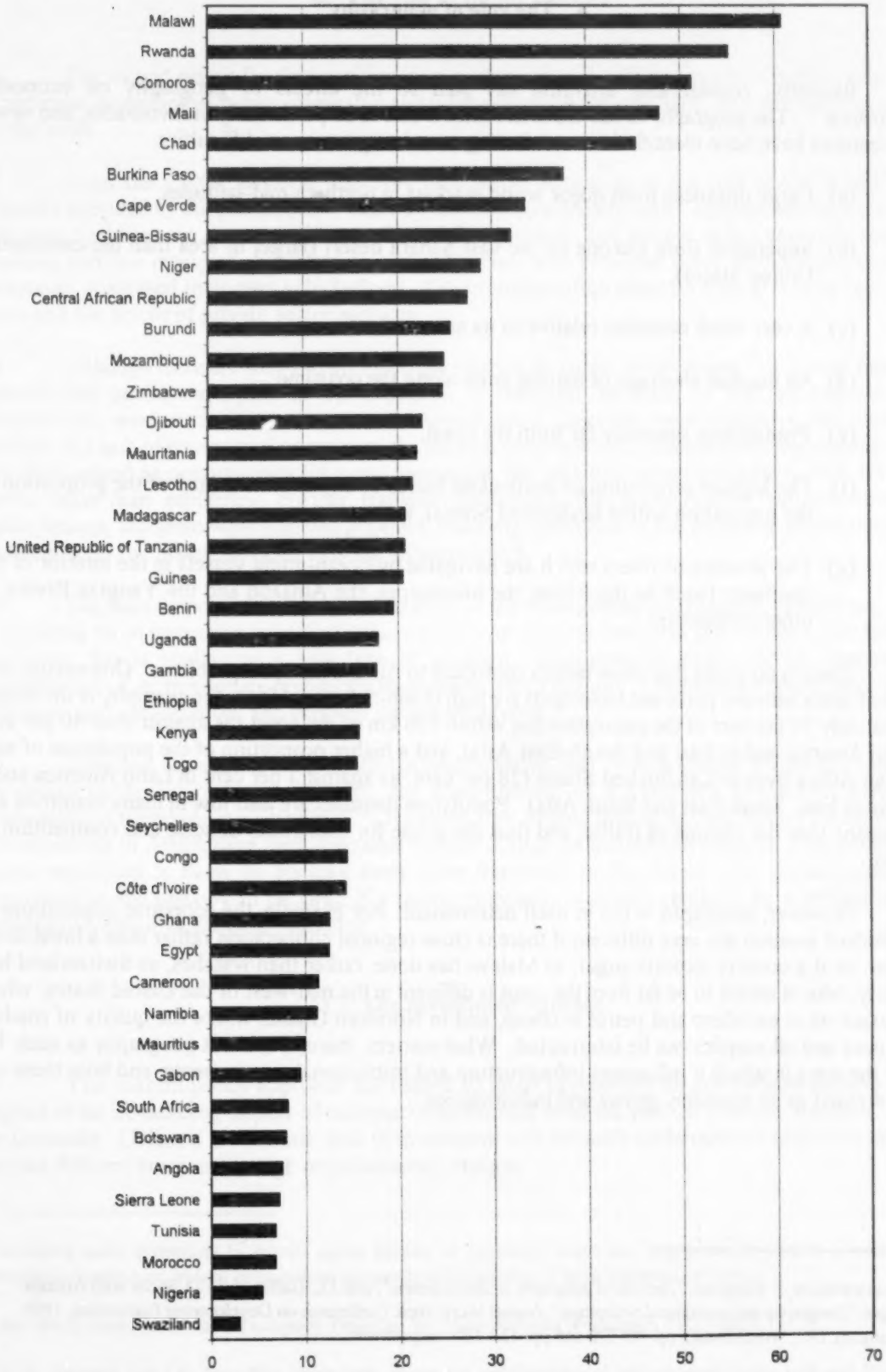
[11] For further discussion of this issue see UNCTAD, *Trade and Development Report, 1998*, and C. Delgado, "Agricultural diversification and export promotion in sub-Saharan Africa", *Food Policy*, vol.20, no. 3, 1995, pp. 225-243.

**Chart 1**

**Imports of transport services as a percentage of the total exports of goods and services**




*Source*: World Bank, *World Development Indicators* (CD-ROM, 1999)

## A. The role of geography

23. Recently, considerable attention has paid to the effects of geography on economic performance.[12] The geography of sub-Saharan Africa is said to be particularly unfavourable, and seven of its features have been identified as contributing to existing transport difficulties:

(a) Large distances from major world markets in northern mid-latitudes;

(b) Separation from Europe by the vast Sahara desert (larger in area than the continental United States);

(c) A very small coastline relative to its area;

(d) An unusual shortage of natural ports along the coastline;

(e) Populations generally far from the coast,

(f) The highest proportion of landlocked States of any continent (and of the proportion of the population within landlocked States); and

(g) The absence of rivers which are navigable by ocean-going vessels in the interior of the continent (such as the Rhine, the Mississippi, the Amazon and the Yangtze Rivers, in other continents).[13]

24. There is no doubt that these factors contribute to Africa's transport problems. One reason why transport costs between ports and hinterlands are high in sub-Saharan Africa, for example, is the simple fact that only 19 per cent of the population live within 100 km of the coast (as against over 40 per cent in Latin America and in East and South-East Asia), and a higher proportion of the population of sub-Saharan Africa lives in Landlocked States (28 per cent, as against 3 per cent in Latin America and 2 per cent in East, South-East and South Asia). Population densities are also low in many countries and this means that the volume of traffic, and thus the scope for economies of scale and competition, is limited.

25. However, geography is not in itself determinant. For example, the economic implications of a landlocked location are very different if there is close regional cooperation rather than a breakdown of trust, or if a country exports sugar, as Malawi has done, rather than watches, as Switzerland has. Similarly, what it means to be far from the coast is different in the mid-west of the United States, where infrastructure is excellent and petrol is cheap, and in Northern Ghana, where the quality of roads is often poor and oil supplies can be interrupted. What matters, therefore, is not geography as such, but rather the ways in which it influences infrastructure and institutional requirements, and how these can be addressed as an economy grows and industrializes.

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[12] See, in particular, P. Krugman, "The role of geography in development", and J.L. Gallup and J.D. Sachs with Andrew Mellinger, "Geography and economic development", Annual World Bank Conference on Development Economics, 1998 (Washington, DC, World Bank), pp. 89-126 and pp. 127-189, respectively.

[13] See D.E. Bloom and J.D. Sachs, "Geography, demography and economic growth in Africa", *Brookings Papers on Economic Activity*, 2, 1998, pp. 236-237.

## B. The role of public policies

26. The second reason for the poor transport performance should be sought in public policy, and in particular in inefficient public ownership and intervention on the one hand, and in under-regulation on the other.

27. Until the 1990s, physical transport facilities in Africa, as in the rest of the world, were primarily provided by the public sector. Railway services were usually under a public sector monopoly, and most countries ran air and maritime national-flag carriers. The private sector generally operated trucking and bus transport, but State-owned enterprises also provided these services and generally parastatals possessed their own vehicle fleets. Governments often played a critical role by regulating entry and the prices of private sector services.

28. Although there are well-known legitimate reasons for public involvement,[14] it is now generally agreed that public monopoly in the provision of transport services, as well as heavy-handed intervention, weakened transport systems in several ways. Services were expensive and unreliable because of a lack of commercial orientation, the absence of competition, cumbersome regulations which too often served as opportunities for petty corruption, and incentive structures which often favoured inertia rather than efficiency. Further, transport parastatals often drained rather than contributed to public finance, and there were muddled priorities, including urban bias in the provision of infrastructure and neglect in the maintenance of existing infrastructures.

29. The main response has been privatization of the management of transport operations, which is occurring on an increasing scale, particularly in African airports, seaports and railways (see table 3). However, this is leading to a new type of problem. Best-practice policy reform requires the establishment of an appropriate regulatory framework which ensures constructive competition, avoids predation and cartelization, and protects the public interest.[15]

30. Historical research on infrastructure provision shows that "where market forces are weak and important public interests are at stake...the strengthening of government institutions may be a prerequisite of successful privatization".[16] However, the already inadequate regulatory capabilities of Governments in Africa have been degraded further during the adjustment process. This problem of under-regulation is likely to become even more important in the future. Net social gains from privatization are unlikely to be large if a public monopoly is simply replaced by a private natural monopoly without an efficient regulator.

## C. The investment squeeze

31. The current policy approach has tended to focus excessively on government failures to the neglect of the devastating impact of collapse of investment over the past 20 years on transport sector performance. Unless it is reversed, lack of investment will certainly undermine all efforts to improve service delivery systems through organizational changes.

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[14] Including under-investment by private agents because of the lumpy nature and long gestation periods of much transport infrastructure, as well as the natural monopoly characteristics of some transport services

[15] See World Bank, *Sustainable Transport: Priorities for Policy Reform* (Washington, DC, 1996).

[16] C.D. Jacobsen and J.A. Tarr, "No single path: ownership and financing of infrastructure in the 19th and 20th centuries", in A. Mody (Ed.), *Infrastructure Delivery: Private Initiative and the Public Good* (Washington, DC, World Bank, 1996), pp. 32-33.

**Table 3**
Selected forms of private participation in railways, airports and seaports

| Form of participation | Sector | Countries | Year |
|---|---|---|---|
| Management contract | Railways | Cameroon | Pre-1996 |
| | | Togo | Pre-1996 |
| | | Malawi | 1993 |
| | | Burkina Faso | 1997 |
| | | Dem. Rep. Congo | 1998 |
| | Airports | Guinea | Pre-1996 |
| | | Madagascar | Pre-1996 |
| | | Togo | Pre-1996 |
| | Seaports | Cameroon | Pre-1996 |
| | | Sierra Leone | Pre-1996 |
| Lease | Railways | Côte d'Ivoire | Pre-1996 |
| | | Gabon | 1997 |
| | | Cameroon | 1998 |
| | Airports | Mauritania | Pre-1996 |
| | | Côte d'Ivoire | 1996 |
| | Seaports | Mozambique | Pre-1996 |
| | | Zambia | 1998 |
| Concession/build-operate-transfer | Railways | Malawi | 1993 |
| | | Mozambique | 1998 |
| | | Tunisia | 1998 |
| | Airports | Senegal | 1996 |
| | Seaports | Mali | Pre-1996 |
| De-monopolize/build-own-operate | Seaports | South Africa | Pre-1996 |
| Divestiture | Airports | South Africa | 1997 |

*Source:* African Development Bank, *African Development Report 1999: Infrastructure Development in Africa* (Oxford and New York, Oxford University Press), chapter 5.

**Notes**

*Management contract*: a private contractor assumes responsibility for the full range of operation and maintenance functions, with authority to make day-to-day management decisions.

*Leasing*: a firm pays a lease fee to operate and maintain a State-owned enterprise for a specified period of time, while earning its income directly from tariffs. The firm which takes the lease has no obligation to invest in new infrastructure.

*Investment concessions*: the private contractor has the obligation not only to operate and maintain the infrastructure facility but also to build and finance investments in new facilities or expand existing ones. *Build-operate-transfer* (BOT), *rehabilitate-operate-transfer* (ROT) and *build-own-operate* (BOO) are common forms of investment concessions. In a BOT, a private party (or consortium) agrees to finance and construct a facility, and operate and maintain it, for a specified period and then transfer the facility to a Government or other public authority.

*Divestiture*: this involves the sale to the private sector of the ownership of existing assets and the responsibility for future expansion and maintenance.

32. The investment squeeze is rooted in declining public investment and official development assistance (ODA) in infrastructure. The gap has not been filled by private investment.

33. The average rate of public investment in sub-Saharan Africa was more than halved between the 1970s and the first half of the 1990s. During the period 1970-1979 it averaged 12.6 per cent of gross domestic product (GDP), but by 1990-1995 it was as low as 5.6 per cent.[17] Since infrastructure typically represents 40-60 per cent of public investment, this implies that public infrastructure investment in sub-Saharan Africa was at most 3.4 per cent of GDP in the latter period. This is just two-thirds of what expert opinion suggests is the minimum infrastructure spending by government.[18]

34. The drop in public expenditure reflects the severe fiscal retrenchment associated with the attempt to reduce budget deficits under stabilization and adjustment programmes and the failure to find new sources of revenue as trade taxes declined.

45. The ongoing decline in aid flows has aggravated the situation. It is worth recalling in this regard that in 1989 the World Bank stated that "if the critical minimum needs for reversing Africa's decline are to be met, ODA needs to grow at 4 per cent a year in real terms."[19] In practice, ODA to sub-Saharan Africa fell in real terms by 25 per cent over the period 1990-1997.[20]

46. Available estimates on the composition of official flows from the Organisation for Economic Co-operation and Development (OECD) show that a downward trend has also occurred with regard to economic infrastructure. Strikingly, flows of official development finance[21] for economic infrastructure to sub-Saharan Africa had fallen behind both East and South Asia in 1994, and bilateral ODA to SSA was actually only one-quarter of that to East Asia, and two-thirds of that to South Asia, in 1995 and 1996 (table 4). This pattern reflects the fact that international and donor support for policy reform and debt restructuring, which rose from 12 per cent to 30 per cent of total official development finance disbursements over the period 1984-1994, is crowding out direct assistance for investment projects in sub-Saharan Africa. Between 1990 and 1994, only 23 per cent of official development finance to sub-Saharan Africa went into economic infrastructure whilst this figure in East and South Asia was 47 and 42 per cent respectively.

47. The consequences of the decline in public investment would not be so serious if they were counterbalanced by increased domestic and foreign private investment in infrastructure. However, private investment has also declined during the adjustment period, and, with the notable exceptions of the emerging markets of North Africa, South Africa and, recently, the Côte d'Ivoire, Africa has failed to attract foreign investment in infrastructure. Estimates of external private flows to infrastructure in sub-Saharan Africa indicate that they were less than about 3 per cent of flows into East Asia, and less than 4 per cent of flows to Latin America during the period 1990-1996 (table 4).

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[17] L. Bouton and M.A. Sumlinski, "Trends in private investment in developing countries: statistics for 1970-95", International Finance Corporation Discussion Paper no. 31 (Washington, DC, World Bank, 1996).

[18] J.D. Sachs, "External debt, structural adjustment and economic growth", in UNCTAD, *International Monetary and Financial Issues for the 1990s*, vol. IX (United Nations publication, sales no. E.98.II.D.3), New York and Geneva, 1998, p. 49.

[19] World Bank, *Sub-Saharan Africa: From Crisis to Sustainable Growth* (Washington, DC, 1989), p. 14.

[20] World Bank, *Global Development Finance* (Washington, DC, 1998), p. 135.

[21] Official development finance is defined as the sum of the receipts of bilateral ODA, concessional and non-confessional resources from multilateral sources, and bilateral other official flows made available for reasons unrelated to trade, in particular loans to refinance debt (OECD, *Geographical Flows to Aid Recipients, 1990-1994*, p. 248).

**Table 4**
External financial flows to economic infrastructure[a]
*(in billions of US dollars)*

| Region | Year | Official development finance[b] | Private finance[c] |
|---|---|---|---|
| East Asia | 1990 | 4.1 | 0.8 |
| | 1991 | 4.4 | .. |
| | 1992 | 5.8 | 3.1 |
| | 1993 | 5.9 | .. |
| | 1994 | 5.3 | 9.2 |
| | 1995 | (7.3) | 10.9 |
| | 1996 | (5.4) | 9.7 |
| Latin America and Caribbean | 1990 | 3.6 | 0.4 |
| | 1991 | 1.8 | .. |
| | 1992 | 3.2 | 4.6 |
| | 1993 | 2.5 | .. |
| | 1994 | 2.4 | 6.8 |
| | 1995 | (0.8) | 3.5 |
| | 1996 | (1.5) | 10.3 |
| South Asia | 1990 | 3.2 | 0.1 |
| | 1991 | 4.4 | .. |
| | 1992 | 3.1 | 0.1 |
| | 1993 | 3.5 | .. |
| | 1994 | 4.3 | 2.9 |
| | 1995 | (2.4) | 2.3 |
| | 1996 | (2.7) | 2.0 |
| Sub-Saharan Africa | 1990 | 5.2 | - |
| | 1991 | 4.1 | .. |
| | 1992 | 4.5 | 0.3 |
| | 1993 | 4.5 | .. |
| | 1994 | 4.2 | - |
| | 1995 | (1.6) | 0.5 |
| | 1996 | (1.6) | 0.2 |

[a]Economic infrastructure includes transport and communications, power, water and sanitation.

[b]UNCTAD secretariat estimates based on figures of the OECD Development Assistance Committee (DAC). Official development finance is as defined in footnote 21, except for figures for 1995 and 1996 which only cover bilateral ODA.

[c]Euromoney and World Bank estimates, from Global Coalition for Africa, *Annual Report 1997/1998*, Table 1.

48. The consequence of the investment squeeze for transport is that facilities deteriorate and operating costs escalate, and unexpected breakdowns occur. The most dramatic indication of the problem is deterioration of the road network. The World Bank estimates that the value of the total stock of the roads in sub-Saharan Africa has depreciated from US$ 150 billion to US$ 100 billion over the decades.[22]

49. The problem of maintenance was first identified in the late 1980s by the World Bank and since then major efforts have been made through the World Bank/Economic Commission for Africa Road Maintenance Initiative to ensure that new roads are not built while old ones are neglected. However, it is clear that for many countries, even with a reordering of spending priorities, financial capacity has been a binding constraint. A World Bank assessment of the late 1980s found that of 31 African countries only 8 had sufficient financial capacity to restore their road networks. In 14 countries, financing capacity was marginal in the sense that funds would only be sufficient to complete restoration in 10 years if funding were increased by 50 per cent and new construction held to 20 per cent of the new total, whilst in 9 countries restoration could not be completed even if these two conditions were met.[23]

50. It is not surprising therefore that even where major efforts have been made to give priority to maintenance, success has often not met expectations. A study of 12 East African countries, for example, found that maintenance funding was sufficient for only 30 per cent of current networks, and if Comoros, Mauritius and Seychelles were excluded, just 20 per cent.[24]

51. The investment squeeze has been exacerbated by foreign exchange constraints. The foreign exchange components of financing requirements for restoring road networks range from 30 per cent for routine maintenance in middle-income countries to 70 per cent for restoration of paved roads in low-income countries. Thus, "in the group of the countries at the hard core of the [road deterioration] problem, no solution is conceivable without external financing".[25]

52. The foreign exchange problem affects not simply the quality of facilities and networks but also the efficiency of transport equipment. As chart 2 shows, there has been a dramatic decline in capital goods imports (which include both machinery and transport equipment) in Africa since 1981. The real value of capital goods imports per capita fell by half over the period 1981-1988 and since then it has failed to recover, and even continued to decline in the 1990s, though at a much slower rate. This pattern contrasts markedly with that in other developing countries, in which the real level of capital goods imports per person has more than doubled since the mid-1980s.

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[22] S.W. Cather, "Better roads for economic growth", *Africa Business*, March 1999, pp. 14-16.

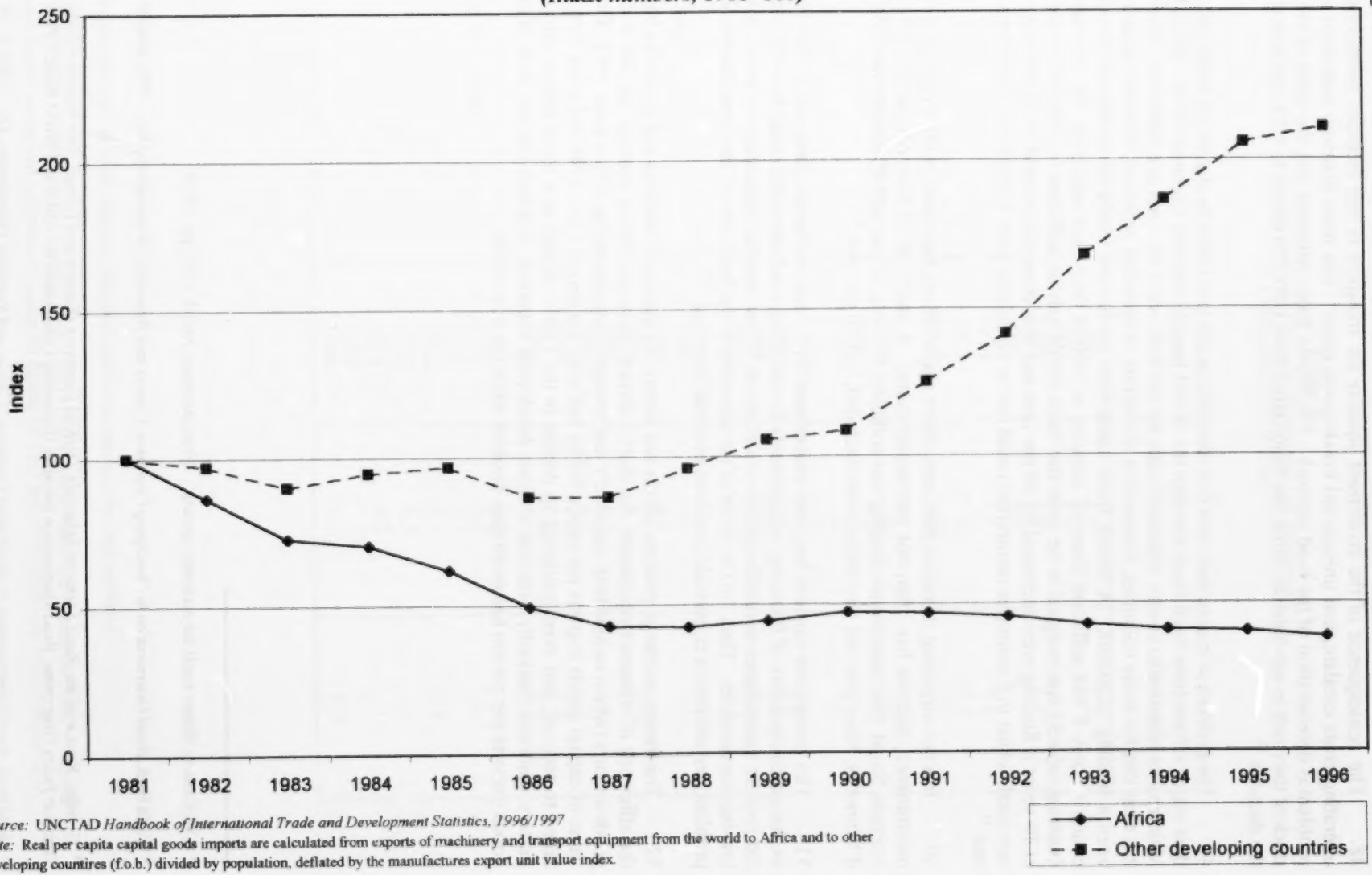
[23] World Bank, *Road Deterioration in Developing Countries: Causes and Remedies* (Washington ,DC, 1988), chapter 4.

[24] O. Sylte, *Review of the Road Sector in Selected COMESA Countries (Eastern and Island)*, Sub-Saharan African Transport Policy Programme, Road Maintenance Initiative (Economic Commission for Africa and World Bank, 1996).

[25] World Bank, *Road Deterioration in Developing Countries: Causes and Remedies* (Washington, DC, 1988), p. 28.

**Chart 2: Capital goods imports per capita (machinery and transport equipment) in Africa (excluding South Africa) and other developing countries (including China) (1981-1996)**

***(Index numbers, 1981=100)***




*Source:* UNCTAD *Handbook of International Trade and Development Statistics, 1996/1997*

*Note:* Real per capita capital goods imports are calculated from exports of machinery and transport equipment from the world to Africa and to other developing countires (f.o.b.) divided by population, deflated by the manufactures export unit value index.

## Chapter III

## RESOLVING THE INFRASTRUCTURE CRISIS

### A. The scope for private finance

53. Hopes are now increasingly pinned on private sector participation in infrastructure financing to resolve Africa's infrastructure crisis.[26] It is important that African Governments exploit this possibility to the extent that it is compatible with public interests. However, it is also necessary to be realistic about the scope for private financing, the lion's share of which must come from abroad.

54. Two distinct processes are usually subsumed under the idea of private participation in infrastructure financing: firstly, the sale of State-owned enterprises and public works to the private sector; and, secondly, the introduction of private capital for distinct infrastructure projects. The former is a transfer of ownership, though there is an expectation that privatized utilities will lead to new investment. The latter, which will be the main focus here, is the major means for financing new investments and undertaking rehabilitation when discrete infrastructure projects, such as a toll road or power plant, are undertaken by the private sector.

55. Project financing is the most basic option for financing new infrastructure in developing countries.[27] It has been described as "the first rung on the ladder" of financing new infrastructure, and is seen as being particularly appropriate for countries at low levels of development with a limited track record in private infrastructure provision, weak domestic capital markets and low administrative capabilities.[28] However, there are limits to the types of infrastructure problem that project financing can help to solve, as well as to the number of countries to which it can be attracted.

56. There are two major generic types of infrastructure development problem. The first is in booming national or urban economies where the demand for transport services is growing faster than supply and there are congestion costs and capacity constraints. The second is in rural areas where the absence of infrastructure impedes the development of markets. Beyond this there are two special infrastructure development situations in Africa: landlocked countries and war-torn economies. In the former, there can be under-investment in coastal countries, because many benefits of investment accrue to the landlocked countries. In the latter, the issue is one of reconstruction.[29]

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[26] The example of Côte d'Ivoire is illustrative. Contracts to modernize and extend Abidjan Airport and to build a bridge connecting two districts of the capital led to investments of US$ 210 million, a sum equivalent to about 11 per cent of the public investment programme in 1998; see Minister Tidiane Thiam, statement at the 1999 African Development Bank Annual Meetings Symposium on "Infrastructure for Africa's development", Cairo, Egypt, 24 May 1999.

[27] Under project financing, a discrete infrastructure investment (such as a toll road or power plant) is undertaken by a special-purpose legal corporation, which brings together private sponsors and other equity holders. Sponsors raise funds on the basis of the assets and expected revenues of the project, and lenders have limited or no recourse to the assets of the parent company sponsoring the project should the actual earnings stream not meet expectations. Lenders are repaid from the cash flow generated from the project, or in the event of its complete failure from the value of the project's assets. For a comprehensive introduction, see J.D. Finnerty, *Project Financing: Asset-based Financial Engineering* (New York, John Wiley, 1996).

[28] World Bank, *World Development Report 1994: Infrastructure for Development* (Oxford and New York, Oxford University Press), p. 108.

[29] This issue is addressed in African Development Bank, *African Development Report 1999* (Oxford and New York, Oxford University Press), part two.

57. It is in relation to the first generic problem that private finance is likely to make a difference, since buoyant demand will generate a reliable future stream of profits. In the other situations, public financing and ODA must predominate.

58. Even under conditions where private finance is likely to play a role, there are limits to the types of assets and activities to which private finance is attracted in the transport sector. For both privatization and project finance, the most attractive areas are those for which: (a) access can be limited (as in airports, tunnels, bridges and major highways); (b) the projected volume of traffic is high (container ports, freight rail, primary roads); (c) the generation of cash is expected to be reliable, and (d) foreign exchange earnings are possible.[30] Attractive assets are ones in which there is a scope for monopolistic power. Most secondary and tertiary components of the transport network are characterized by low volumes of traffic and an inability to restrict access, and hence they are unattractive for private sector financing.

59. Finally, regardless of government efforts to establish an appropriate legal framework and attractive investment climate, some countries will always find it difficult to get private finance for infrastructure. The two most important factors which limit investor interest are high levels of indebtedness and instability of foreign exchange earnings, as in countries heavily dependent on a few commodity exports. Both features have a negative influence on credit ratings and increase uncertainty regarding future profit remittances. Small countries find themselves in a doublebind because large projects can dominate overall economic performance and thus are considered risky. Further, remittances may become too large in relation to available foreign exchange reserves. Yet small projects (those costing less than several hundred million dollars) are not big enough to justify the high development cost of project finance. Projects of this size are the dominant form in the majority of LDCs.

## B. The role of government

60. In the early 1990s only about 7 per cent of the US$ 200 billion spent annually on infrastructure in developing countries was private investment, with most of this going to Latin America and Asia. Projections estimate that there is the potential for a doubling of the private sector's share to 15 per cent of total transport infrastructure financing requirements over the period 1995-2005 if all private sector proposals that were publicly known in 1995 come to fruition during that period.[31] Thus, even in the most optimistic scenario, in which Africa increases its share of private capital flows for infrastructure to the global average, private finance should be seen as a supplement to public investment, rather than as a solution to the infrastructure crisis.

61. Against this background, the role of government is twofold. Its first role is to complement and facilitate market forces by adopting a strategic perspective, system management and regulatory framework within which infrastructure rehabilitation and development can be carried out. This includes projecting infrastructural investment requirements, and identifying profitable projects in which the private sector might get involved.

62. The measures which the Governments of poor countries can take to increase their attractiveness to private finance are set out in *The Least Developed Countries 1998 Report* and associated

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[30] World Bank, *Sustainable Transport: Priorities for Policy Reform* (Washington, DC, 1996), p. 42.

[31] *Ibid.*, p. 109.

documents.[32] Policies designed to attract private finance should seek to reconcile the public interest with the profit motive. Experience in East Asia shows that the expectations of private companies for high internal rates of return, say 20-25 per cent, can lead to higher user prices on BOT projects than those on public facilities. Most infrastructure projects also do not directly generate foreign exchange, and remittances can build up balance-of-payments pressures in the long term.[33] Also guarantees, particularly to cover exchange rate risks, can result in an additional burden on the government budget. There may, thus, be cases of unforeseen public costs in privately financed infrastructure projects, even though the original aim was to reduce the fiscal burden.[34]

63. The second key role of government is to adopt pricing policies for existing and new infrastructure services so as to mobilize adequate public financing for infrastructure maintenance and development. It is in this bread-and-butter area of public finance, rather than through measures to attract private financing, that Governments can realistically do most to tackle the financing crisis.

64. There is a strong case for pricing infrastructure services to achieve cost recovery. However, a number of quite technical issues arise in designing pricing policy, including the applicability of different pricing principles, the role of earmarked funds, the need to achieve environmental objectives and the impact on poverty and income distribution.[35] The impact on competitiveness of cost recovery in transport services needs to be carefully monitored, owing to possible disincentives to producers and users. In some circumstances, full cost recovery may not be advisable. The ideal situation is one in which the pressures to increase prices of transport services following a shift to cost recovery are offset by lower operating costs owing to improved facilities. This can happen, for example, with improved road maintenance, where it is estimated that every dollar of essential maintenance postponed increases the cost of operating a vehicle in the current period by over three dollars.[36]

65. Successful cost recovery is best complemented by policies which reduce costs and total infrastructure financing requirements. The spatial coordination of projects may contribute to reducing the demand for transport. Other important policies are the re-examination of procurement practices, the adoption of timely maintenance, and intermodal transport planning and investments to facilitate multimodal operations.

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[32] UNCTAD, The Least Developed Countries 1998 Report (United Nations publication, sales no. E.98.II.D.11), New York and Geneva, 1998; United Nations Industrial Development Organization (UNIDO), "Investment opportunities in infrastructure in least developed countries", document prepared for the UNIDO/UNCTAD pilot seminar on the mobilization of the private sector to encourage foreign investment flows towards the least developed countries, 23-25 June 1997 (UNIDO/ITPD/TS); and UNCTAD, *Investing in Pre-emerging Markets: Opportunities of Risk Capital in the LDCs* (United Nations publication, sales no. E.98.II.D.2 ) New York and Geneva, 1998, chapter 5.

[33] See chapter V, UNCTAD, Trade and Development Report 1999 (forthcoming).

[34] For an excellent discussion of the benefits and problems of project finance in infrastructure projects based on the East Asian experience, see H. Shoji and R. Yamagishi, "Private sector financed infrastructure development in developing countries", *OECF Journal of Development Assistance*, vol. 3, no. 1 (1997) pp. 27-60. For the adverse effects of the East Asian financial crisis on Asian infrastructure, see special section of the *Financial Times* of 14 September 1998.

[35] For a general discussion of this issue, see V. Swaroop, "The public finance of infrastructure: issues and options", in A. Mody (op. cit.). A comprehensive case study for road transport can be found in D.M. Newbery, *Road Transport Taxation in Developing Countries: The Design of User Charges and Taxes for Tunisia*, World Bank Discussion Paper no. 26 (Washington, DC, 1988). An upbeat and important assessment of the role of infrastructure pricing in public finance reform in sub-Saharan Africa can be found in D. Anderson, "Infrastructure pricing policies and the public revenue in African countries", *World Development*, vol. 17, no. 4, 1989, pp. 525-542.

[36] World Bank, 1996, op. cit., p. 3.

## C. Reforming official development assistance

66. Government efforts to solve the crisis in infrastructure financing cannot be successful without increased levels of ODA. The justification for ODA in this area is indicated by the fact that transport investment projects generally have high rates of return.[37]

67. To achieve greater aid effectiveness, it is necessary to consider possible reforms to ODA. Three areas are particularly important. The first concerns the practice of tying aid. It has been estimated that in the early 1990s between two-thirds to three-quarters of ODA to infrastructure was fully or partially tied, whereas less than 20 per cent of ODA to other areas was tied.[38] This tends to undermine international competition in procurement, to increase costs and to lead to the installation of inappropriate equipment. One example of the consequences of such tying is the high cost of telecommunications investment in sub-Saharan Africa, where the average costs per new line added are US$ 5,600 as against US$ 1,500 in other developing countries. The reasons for this are disputed. However, national operators have relied extensively on loans from international finance institutions arranged via Governments or bilaterally. Most countries have typically based their choice of credit on the financing terms offered, and this has encouraged lenders to offer cheap lending terms on overpriced equipment.[39]

68. The second area concerns the elaboration of innovative methods of financing rural transport infrastructure and the development of appropriate transport means. The case for providing official assistance to promote rural development is compelling. This is because, as discussed above, there is strong evidence that the lack of infrastructure and appropriate means of transport is blocking the development of specialization within rural areas and discouraging exports. Resolving the problem of Africa's rural infrastructure and promoting the integration of farming households into the wider market economy will not only facilitate growth but also reduce poverty, which is concentrated in rural areas.

69. In the past, rural infrastructure was financed through large-scale integrated rural development projects. With the decline in donor support for such projects, there has been a decline in investment in rural infrastructure, and the challenge is to develop new mechanisms. These need to be adapted for small-scale loans.

70. The third important area relates to further steps which can be taken to enhance the attractiveness and effectiveness of risk-sharing products of the World Bank and African Development Bank, and in particular guarantees against specific political risks which deter private investment in commercially attractive projects. This area is important as these products can play a catalytic role in mobilizing private finance. Issues include: ways and means of increasing the effectiveness of the partial risk guarantees and partial credit guarantees introduced by the International Bank for Reconstruction and Development in 1994 and extended in May 1997 to countries which were only eligible to borrow funds from the International Development Association (IDA); the level of resources of the International Finance Corporation and the Multilateral Investment Guarantee Agency; and the diffusion of innovations and experience between regional development banks, and in particular from the Inter-

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[37] Global estimates suggest rates of return range from 20 to 60 per cent, with some micro-economic studies producing lower rates and some macroeconomic studies even higher rates. In World Bank lending, rates of return for transport sector projects have historically been higher than in other sectors. See R. Ahmed, "A critique of the World Development Report 1994: Infrastructure for Development", in UNCTAD, *International Monetary and Financial Issues for the 1990s*, vol. VII, 1996 (UNCTAD/GID/G.24/7).

[38] World Bank, *World Development Report 1994*, p. 91.

[39] M.A. Mustafa, B. Laidlaw and M. Brand, "Telecommunications policy in sub-Saharan Africa", World Bank Discussion Paper no. 353 (Washington, DC, World Bank, 1997), p. 3.

American Development Bank, which has completed a partial risk guarantee transaction without a host-country guarantee and a transaction involving a concession awarded by a sub-sovereign authority.[40]

## Chapter IV

## PRIORITIES FOR REGIONAL COOPERATION

### A. The case for regional cooperation for transport infrastructure financing

71. There is a strong consensus that a regional approach is particularly desirable for addressing Africa's transport problems. However, in this area discussions and efforts have often concentrated on institutional harmonization and policy coordination, particularly to simplify international transit traffic, rather than on infrastructure financing.[41] In fact, regional cooperation can play an important role in reducing infrastructure financing requirements and raising available resources.

#### 1. Reducing infrastructure financing requirements

72. There are three basic ways in which a regional approach can reduce infrastructure financing requirements. Firstly, it can lead to a reduction in the capital costs of network development and rehabilitation. Installation costs can be reduced when economies of scale are achieved through joint planning and tendering. Moreover, the duplication of facilities can be avoided through the development of a hub-and-spokes transport infrastructure centred on major trans-shipment airports and seaports, a process which is much less advanced in Africa than in other regions.[42] Reliable cooperation and trust between landlocked and coastal countries could also enable the former to concentrate on the least-cost routes to the sea and not to develop "insurance routes" against possible disruptions of transit through the natural corridor to the sea.

73. Secondly, costs can be reduced by adopting a regional approach to equipment procurement and maintenance. Examples in southern and eastern Africa include pooling of aircraft maintenance centres, joint procurement of railway rolling stock, locomotives and spare parts, and acquisition and joint ownership of equipment for dredging regional ports. Estimates made in relation to the Telecommunication Network Interconnection project of the Common Market for Eastern and Southern Africa show that a 1,000 line digital international exchange costs on average US$ 4.2 million, whereas if the project was carried out jointly, the cost would be about US$ 2.2 million.[43]

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[40] For a discussion of possible improvements to World Bank operations, see Institute of International Finance (IIF) "Risk-sharing by the World Bank Group in support of private sector projects in emerging market economies", Report of the Working Group on Risk Mitigation (Washington, DC, 1997); and IIF, "Report of the IIF Working Group on the Private Sector Operations of the Inter-American Development Bank (Washington, DC, 1998).

[41] An exception is P.B. Robinson, "Potential gains from infrastructural and natural resource investment coordination in Africa", in J.J. Teunissen (ed.), *Regionalism and the Global Economy: The Case of Africa* (The Hague, Forum on Debt and Development (FONDAD), 1996), pp. 68-98.

[42] UNCTAD, "Development and improvement of ports: the establishment of trans-shipment facilities in developing countries" (TD/B/C.4/AC.7/10), 1990.

[43] S.N. Ngwenya, "Comment on 'Potential gains from infrastructural and natural resource investment coordination'", in J.J. Teunissen, op.cit., pp. 102-106.

74. Finally, public expenditure savings can be achieved if the rationalization of transport parastatals - such as airlines - is undertaken on a regional basis.[44]

## 2. Mobilizing resources

75. Despite various innovations, regional lending of the World Bank has been limited by the lack of instruments to lend directly, or provide guarantees, to regional projects.[45] Loans are generally disbursed on the basis of individual country assessments and agreements, without consideration of spillovers to other countries, while cross border projects require multi-country loan syndication. In the case of the African Development Bank, there has been a historical tendency for higher rates of non-repayment of arrears on regional project lending owing to disagreements about which country is responsible for repaying what proportion of loans on multi-country projects. Only 5-10 per cent of African Development Fund replenishment is thus allocated for regional projects.

76. Despite these difficulties, it is possible for a regional approach to attract more donor funding, even without new instruments, if countries can collectively agree on a subregional transport programme, the various parts of which are then financed through loans to individual countries. The way in which this approach can help to mobilize donor funding is well illustrated by the experience of the Southern African Development Community (SADC). In the latter case, a dedicated transport institution, the Southern African Transport and Communications Commission made traffic forecasts on which to base transport infrastructure requirements and identified specific investment projects which were organized on a corridor approach. This approach is now also being pursued in East Africa as the Commission for East African Cooperation has identified an East African Regional Road Network.[46]

77. A regional approach can also help to mobilize private finance for infrastructure rehabilitation and development, and is vital for helping small countries to have access to private finance. No doubt the shared use of facilities increases the legal and jurisdictional complexities of project financing, but increasing experience on how to tackle ownership issues has been gained through international water-sharing projects.[47] Also, the private financing of multi-country infrastructure projects creates complementary interests between landlocked and coastal countries as transit infrastructure directly generates foreign exchange.

78. Regional institutions which facilitate public-private partnerships in infrastructure provision include the Southern African Development Bank and the South African Infrastructure Fund, which was launched in 1996 to enable institutional investors, such as pension funds, to invest in infrastructure projects while retaining the benefits of risk diversification and professional fund management and avoiding direct contact with host Governments. An important innovation, which could particularly benefit small countries and the least developed countries, would be regional venture funds, which could use grants from multilateral organizations to pay pre-investment development costs and management

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[44] networks and air traffic control and navigation systems in the region could probably save 4-5 per cent of the region's GDP; P.S. Mistry, "Regional dimensions of structural adjustment in Southern Africa", in J.J. Teunissen, op. cit., pp. 165-289.

[45] Initiatives taken within the World Bank include: support for the Cross-border Initiative in Eastern and Southern Africa, a change of procedures to enable the use of the Institutional Development Fund to assist regional institutions; investment guarantees in IDA-only countries for regional projects; global environmental facility projects; and loans to regional transport projects (e.g. railway development in Mali and Senegal).

[46] In developing such a regional approach to network identification, transport infrastructure agreements and cooperation procedures developed in Europe by the Economic Commission for Europe may provide useful institutional models.

[47] For an analysis, see A. Kumar et al., "Mobilizing domestic capital markets for infrastructure financing: international experience and lessons for China", World Bank Discussion Paper, no. 377, annex 2, 1997.

fees in selected countries, as the costs of developing projects are simply too high to make assessment of investment opportunities worthwhile, particularly when projects are small and apparently risky.[48]

## B. Forms of regional cooperation

79. There is as yet no general agreement on what constitutes the most appropriate form of regionalism in transport infrastructure. Since the early 1970s, the main objective of African initiatives for regional cooperation has been to promote economic integration and trade amongst African countries. This goal informed the activities of the first United Nations Transport and Communications Decade for Africa (UNTACDA I), and the priority areas for sub-sectoral concentration in the framework for accelerating UNTACDA II are also oriented to support "viable integration" on the continent.[49]

80. It is possible to design regional cooperation in transport so as both to enhance international competitiveness and to promote intraregional trade. Competitiveness will rise to the extent that transport costs are reduced. Further, given that almost one-third of African countries are landlocked, the measures designed to facilitate international transit traffic and establish networks for overseas exports will also support the development of intraregional trade.[50]

## C. The example of corridor development in southern Africa

81. One of the most promising innovations on the continent regarding regional cooperation based on the best use of existing capacities is the corridor development approach pioneered in southern Africa. This approach addresses two distinct problems which developing countries face.

82. The first problem is the fact that transport development, particularly at low income levels, is a chicken-and-egg problem. On the one hand, infrastructure investment is not viable until economic activity justifies it; that is, transport is a derived demand. On the other hand, economic activity cannot emerge unless there are adequate transport facilities; its development is also impeded by high costs until traffic flows increase to levels where economies of scale can be achieved and competition becomes more effective.

83. The corridor development approach addresses this issue by seeking to concentrate viable industrial investment projects within selected corridors connecting inland production areas to ports at the same time as infrastructure investment takes place. The synchronous development of directly productive activity and infrastructure ensures a revenue stream which renders the infrastructure investment attractive to private business. At the same time, the infrastructure investments attract economic activity and help to promote the agglomeration process. Government policy aims to attract "anchor investments" which ensure the basic viability of infrastructure and then to seek to attract in

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[48] UNIDO, op. cit.

[49] Economic Commission for Africa, Report of the Eleventh Meeting Conference of African Ministers of Transport and Communications, 25-27 November 1997, Cairo, Egypt (ECA/TPTCOM/MIN.11/RPT/97).

[50] For a discussion of the implications of the number of landlocked countries in sub-Saharan Africa on regional cooperation, see C.G. Gore, "International order, economic regionalism and structural adjustment: the case of sub-Saharan Africa", *Progress in Planning*, vol. 37, part 3, 1992.

other investment. Special attention is paid to small and medium-sized enterprises in this process, which is called "densification".[51]

84. The second problem facing developing countries concerns the types of instruments which can be used to support the development of export activities in the wake of the Uruguay Round agreements and commitments undertaken in the World Trade Organization. An important area where special incentives are permitted is regional policy measures, and it is such measures that are used to promote the agglomeration process which is at the heart of corridor development. The measures which have been used in South Africa's "spatial development initiatives" are illustrative. Incentives administered through a regional industrial development board and embedded within an industrial policy provide the basis for corridor development.[52]

85. Moreover, the corridor approach successfully defines the role of government in a way which avoids the excessive intervention of the past and the excessive permissiveness of laissez-faire. It is firmly grounded in public-private partnerships, with special private companies being set up to manage the whole process of corridor development, the active involvement of development banks, and with the Government providing a strategic perspective and packages of incentives to catalyse private financing.

86. This approach has been spectacularly successful in the case of the Maputo Corridor. It is apparent from African Development Bank estimates of private sector projects which were in the financial planning or tender stage in 1997 that projects within the Maputo Corridor constitute more than 60 per cent of ongoing infrastructure deals within the transport sector in Africa.[53] Some difficulties have been experienced in launching other spatial development initiatives both in southern Africa and in South Africa, and creative thinking will be required in applying the approach in less developed regions, drawing on similar successful corridor development projects associated with mineral development and corridors linking major inland urban centres and ports.

87. The East Asian experience also indicates that national growth processes have often been focused on a few key transport corridors, which have developed through processes of agglomeration similar to those which are being catalysed in southern Africa.[54] It is not unrealistic to envisage such a developmental process also occurring in Africa if policy is directed to achieve it.

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[51] See P. Jourdan, "An integrated development strategy for the provision of viable infrastructure in partnership with the private sector", paper presented at the 1999 African Development Bank Annual Meetings Symposium "Infrastructure for Africa's development", Cairo, Egypt, 24 May 1999.

[52] Performance-related incentives are geared towards encouraging investment in internationally competitive and labour-absorbing projects, and targeted at specific locations. They include tax holidays, grants to small and medium-sized enterprises, and grants to foreign investors to reimburse the costs of shipping machinery and equipment to South Africa. Firms can also avail themselves of accelerated depreciation allowances, schemes to help manufacturers facing tariff reduction to modernize plant and equipment, low interest schemes, support for research and development and venture capital finance. (Information on these incentives can be obtained at the following website: http://www.sdi.org.za).

[53] Calculated on the basis of African Development Bank, op. cit., table 5.8.

[54] The key transport corridors are: Tokyo-Osaka, Seoul-Pusan, Shenyang-Dalian, Beijing-Tianjan, Shanghai-Nanjing, Taipei-Kaohsiung and Hong Kong-Gungzhou. Four emergent corridors are: Sandong peninsula, The Fujian Seaboard, Singapore-Kuala Lumpur and Jogjakarta. See J.P. Rodrigue, "Transportation corridors in Pacific Asian urban region", *Seventh World Conference on Transport Research, vol. 3: Transport Policy* (Oxford, Elsevier, 1996).

## Chapter V

## CONCLUSIONS

88. Transport is a key sector in creating a dynamic investment-export nexus in Africa, but the capacity and efficiency of transport systems in sub-Saharan Africa are being weakened by a lack of investment, and the poor performance of the transport sector is adversely affecting export performance and market development. As efficiency depends, *inter alia*, on fixed facilities and mobile transport equipment, as well as on human resources and public and private institutions, current efforts to improve the management of transport operations must be complemented by measures to reverse the investment squeeze.

89. Private finance in transport infrastructure projects offers a new source of investment funds and it can make a useful contribution in public-private partnerships where the profit motive can be reconciled with the public interest. However, the small scale of private flows in relation to requirements, and limits on the types of assets and countries to which it is attracted, mean that private finance will at best be a supplement to public investment programmes and ODA, rather than an independent solution to the financing crisis.

90. Mobilizing sufficient public finance to meet transport infrastructure requirements without creating excessive fiscal deficits or harming incentives is critical. There is a need to adopt principles of cost recovery, but due attention has to be given to any adverse effects on users of transport services, prices of tradeables and competitiveness. Cost recovery should be enhanced by measures which aim to reduce infrastructure financing costs, such as the spatial coordination of activities and increased inter-modal complementarity.

91. An increased level of ODA is required. Rates of return from transport projects are generally high and the case for increased ODA is particularly compelling for financing rural infrastructure. There should be much less tied aid, as this prevents competition in international procurement, and recent initiatives of the World Bank and regional development banks to offer risk-sharing products, particularly guarantees, which can attract private funds to countries which are perceived to be high risks, should be assessed and enhanced where necessary.

92. Finally, the case for a regional approach to transport infrastructure financing is as strong as the case for a regional approach to transit traffic facilitation. Such an approach can reduce financing requirements and also help to mobilize resources from donors and private sources. Regional transport cooperation designed to create a dynamic investment-export nexus in Africa can increase both international competitiveness and intra-African trade.